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Twelve-month Angiographic and Clinical Outcomes Following Infrapopliteal Artery Intervention in Patients with Critical Limb Ischemia

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Background: Prognosis of endovascular therapy (EVT) for isolated infrapopliteal arteries has not been adequately studied. We investigated the mid-term outcomes following EVT for isolated infrapopliteal lesions attributable to critical limb ischemia (CLI) in Korean population.
Methods: A total 298 consecutive CLI patients (pts) were treated by EVT from August 2004 to October 2012. Out of 298 pts, a total 176 pts (214 limbs, 341 lesions) underwent infrapopliteal intervention with balloon angioplasty alone and/or provisional stenting. Procedural success, periprocedural complications and clinical outcomes up to 12-months were analyzed.
Results: The baseline clinical characteristics showed that the mean age was 67.2±11.0 years old and diabetes was in 89.2%. Ipsilateral lesion was in 70.1% but bilateral diseases were found in 21.5%. Wounds were found in 80.6% of pts. Out of 176 pts with infrapopliteal lesions, 196 limbs underwent tibial and 51 limbs peroneal EVT. Concomitant EVT was performed in 10 iliac pts (4.6%), 87 femoral pts (40.6%) and 25 popliteal pts (11.6 %). A total 97 pts (55.1%) had chronic total occlusion (CTO) lesions and mean lesion length was 47.04mm. Overall procedural success was achieved in 94 pts (88%). Non-critical periprocedural complications were developed including 88 dissections (50%), 4 abrupt closure (2.2%), 8 no reflow (4.5%), 4 acute thrombosis (2.2%) and 15 perforation (8.5%). At 12 months, primary patency was 37.7%, assisted primary patency was 42.6%, secondary patency 72.1%, repeat PTA 12.5%, limb salvage rate 93.9% and major amputation 6.1% were occurred.
Conclusion: Infrapopliteal EVT with balloon angioplasty alone and/or provisional stenting in a series of Korean CLI pts showed excellent mid-term patency and higher rate of limb salvage.

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Inferior Mesenteric Artery Preservation with Bare Stent in Endovascular Bilateral Iliac Aneurysm Repair Using a Bifurcated Stent Graft with Bilateral Internal Iliac Artery Coil Embolization

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Background: Endovascular aneurysm repair (EVAR) has become a first-line therapy for treating abdominal aortic aneurysms (AAAs). The endovascular treatment for common iliac artery aneurysms (CIAAs) must consist of two parts: first, the branching vessels of the internal iliac artery (IIA) are embolized using coils, and second, a covered stent is placed in the common iliac artery (CIA) and the external iliac artery (EIA) covering the ostium of the IIA. In some selected patients with CIAAs might be treated with a tubed stent graft, and preserve the unilateral or bilateral IIA circulation; however, most patients with bilateral CIAAs have to be managed with bifurcated stent graft and bilateral IIA embolization. Bilateral IIA and inferior mesenteric artery (IMA) interruption embolization carries risks of colonic ischemia, which might be fatal complication of EVAR.
Methods: From February 2013 to November 2013, a total of 3 patients with bilateral CIAAs have been treated by EVAR using bifurcated stent graft with bilateral IIA embolization. All patients were male. The median age at the time of the surgical procedures was 80 years (range, 78 – 84 years). All patients underwent EVAR under general anesthesia. Bilateral femoral arterial access was obtained through bilateral femoral cut-down in the usual manner, and guidewires were placed in the aorta. First, both side of IIA were embolized with coiling. Second, unilateral brachial artery was punctured, and a 4-Fr guiding sheath was placed to cannulate to the IMA. Then, the main body of the bifurcated stent graft, which length was 60 mm (Endologic Powerlink® IntuiTrak, Endologix, Inc. Irvine, CA, USA) was inserted through the femoral access. After the stent graft deployment, a 4 – 5mm sized bare metal stent (Express SD®, Boston Scientific, Cork, Ireland) was inserted into the IMA through the brachial access in order to achieve bail out. The bare stent was partly positioned in the aorta, and the main body and the bare stent were simultaneously dilated. Both EIAs required iliac extenders (Endologic Powerlink®, Endologix, Inc. Irvine, CA, USA) to cover the IIA orifice.
Results: The median operative time was 243 minutes (range; 218 – 295 minutes). All patient's postoperative course were uneventful without the development of colonic, spinal and other pelvic ischemia. During the follow-up period (median 6 months; range 5 - 9 months), enhanced computed tomography showed a patent IMA without enhancement of either CIAA in all treated cases. There was no postoperative complications, including colonic ischemia during the follow-up period.
Conclusion: Even though some endovascular surgeons prefer bypass procedures to maintain IIA circulation, there are few data to support a direct association between the preservation of IIA circulation and colonic ischemia. This endovascular procedure has been attempted in only selected cases, this technique might be a good option for preventing postoperative ischemic colitis in EVAR patients accompanied with bilateral IIA embolization.

Physiologic Lesion Assessment (TCTAP A-210 to TCTAP A-211)

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Impact of Coronary Artery Fixed Lesion on 3-years Clinical Outcomes in Vasospastic Angina Patients with Myocardial Bridge

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Background: It is not known whether the presence of angiographic fixed coronary lesion (FCL) can negatively impact on long-term major clinical outcomes in vasospastic angina patients (pts) with myocardial bridge (MB).
Methods: A total 5,882 patients (pts) underwent coronary angiography with acetylcholine (Ach) provocation test from Nov 2004 to Oct 2010. Among them, total 563 pts who had MB and documented significant coronary artery spasm (CAS) by Ach provocation test were enrolled. Study populations were categorized into two groups; the fixed coronary lesion (FCL) group (n=216) and the non-FCL group (n=347). Cumulative major clinical outcomes were compared between the two groups up to 3 years.
Results: Baseline characteristics were similar between the two groups except the incidence of elderly, hypertension, diabetes, and dyslipidemia were higher in the FCL group. In univariate analysis, only the composite end-point consisted of cardiac death, de Novo percutaneous coronary intervention (PCI), myocardial infarction (MI), and cerebrovascular accident (CVA) was higher in FCL group (Table). However, in multivariate regression analysis, the incidences of cardiac death, PCI, MI, CVA, recurrent chest pain, and other composite end-points were similar between the two groups up to 3 years.
Conclusion: In our study, the presence of angiographic fixed coronary lesion in vasospastic angina pts with MB was not a predictor of adverse long-term clinical outcomes.

Table. Three-year clinical outcomes

Variables, N (%)	Total (n=563)	FCL (n=216)	Non-FCL (n=347)	p-value
Cardiac death	1 (0.1)	1 (0.4)	0 (0.0)	0.384
Percutaneous coronary intervention (PCI)	1 (0.1)	1 (0.4)	0 (0.0)	0.384
Myocardial infarction (MI)	4 (0.7)	3 (1.3)	1 (0.2)	0.160
Cerebrovascular accident (CVA)	1 (0.1)	1 (0.4)	0 (0.0)	0.384
Recurrent chest pain	35 (6.2)	16 (7.4)	19 (5.4)	0.356
Cardiac death, PCI, MI	5 (0.8)	4 (1.8)	1 (0.2)	0.074
Cardiac death, PCI, MI, CVA	6 (1.0)	5 (2.3)	1 (0.2)	0.033
Cardiac death, PCI, MI, CVA, Recurrent chest pain	37 (6.5)	18 (8.3)	19 (5.4)	0.184

*FCL: fixed coronary lesion

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Diagnostic Accuracy of Fractional Flow Reserve to Detect Coronary Ischemic Lesions in Daily Practice

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Background: Clinical trials have shown low rates of clinical events in patients undergoing PCI of ischemic lesions only as determined by a fractional flow reserve <0.8. However there is few data showing the diagnostic accuracy of FFR in real world practice.
Methods: Since 3/11 until 7/13 a total of 324 coronary lesions were assessed by FFR in 238 patients in a single center following standard recommendations for FFR assessment (i.e. Adenosine continuous IV infusion at 140 µg/Kg/min rate). From this data set, we retrospectively assessed 202 lesions from 145 patients who had a baseline SPECT. Diagnostic accuracy of FFR was calculated using SPECT as the gold standard to detect myocardial ischemia.
Results: Male were 73%, mean age was 64±9. 39% of pts had DM, 93% hypertension, 94% dyslipidemia and 81% were non-smoking. Almost 40% of patients had silent ischemia. QCA analysis in all lesions showed RVD=2.7±0.6mm, and %DS=66±13. IVUS MLA=2.92±0.9 and FFR 0.8±0.10. True positives were 49, true negatives 59, false negatives 50 and false positives 49. Sensitivity of FFR was 47% and specificity 54%. Positive and negative predicted values were 46% and 54% respectively.
Conclusion: In this single center retrospective analysis of coronary lesions assessed by FFR in patients with a baseline SPECT, FFR did not show an adequate accuracy to detect myocardial ischemia inducible coronary lesions.

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